

Activity 19 Plain Language Summary

Principal Investigator: Miranda Hart

Introduction

The role of groundcover in pathogen control is largely unknown, yet it is well known plants can alter the composition of soil fungal communities. Increasing the biodiversity of Canadian vineyards above ground may have advantages beyond pathogen suppression, including improved nutrient retention, improved soil structure, reduced herbivory. These ecosystem services will become increasingly important as growers experience the effects of future climate regimes. Although grape growers are eager to exploit cover crops as biofumigants there is insufficient evidence to recommend particular crops or combinations. We will test the role of plant identity in cover crops in viticulture on the incidence and abundance of common trunk fungal diseases.

Objective:

- To develop groundcover mixes to mitigate root disease in grapevine.

Specific Objectives:

- 1) Assess existing ground cover management/disease incidence in the Okanagan wine

Growing region

- 2) Develop ground cover mixes (and management) that reduce root disease
- 3) Test (2), and monitor common vine diseases in commercial vineyards

Methodology

Through a combination of field survey, greenhouse studies and field studies, we will test the Effect of different cover crops on soil fungi associated with grapevine, including common trunk Diseases.

Specifically, to meet our objectives we:

1) conducted a field survey in 2018-19 that correlated typical cover crop mixes in the Okanagan Valley with the prevalence of common trunk fungal disease (Completed)

2) Conducted field studies 2018-2020

- testing the effect of different brassica cover crops as biofumigants for fungal disease suppression at Tantalus winery (In progress)
- We tested the effect of different cover crop/irrigation combinations on soil fungal communities and the abundance of fungal trunk diseases at Covert farms and Summerland Research and Development centre (on going, will collect data 2020)

3) Conducted greenhouse studies 2018-2020 to assess:

- The effect of cover crop biodiversity on trunk disease abundance and severity (published)
- The effect of cover crop provenance (exotic or native) on trunk disease abundance and severity (published)
- The effect of cover crop identity on trunk disease abundance and severity (currently being analysed)
- Susceptibility of common cover crops to pathogens and their potential as pathogen reservoirs (currently being analysed)
- Variation within a functional group (Brassicaceae) on the trunk disease abundance and severity (stage one complete, but stage two postponed due to Covid 19)